DEPARTMENT OF THE NAVY
NAVAL HOSPITAL
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MARINE CORPS AIR GROUND COMBAT CENTER
TWENTYNINE PALMS, CALIFORNIA 92278-8250

IN REPLY REFER TO:
NAVHOSP29PALMSINST 6200.2C
Code 0501
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NAVAL HOSPITAL TWENTYNINE PALMS INSTRUCTION 6200.2C

From: Commanding Officer

Subj: PREVENTING AND REPORTING HEAT CASUALTIES

Ref: (a) NAVMED P-5010, Chap 3
(b) CCO 6200.3A
(c) NAVMED P-5052, Chap 5

Encl: (1) Guidelines on the Prevention of Heat Casualties

1. Purpose. To establish standard procedures for preventing and reporting heat casualties and heat stress conditions as required by references (a) and (b).

2. Cancellation. NAVHOSP29PALMINST 6200.2B.

3. Background. Reference (a) standardizes information concerning heat casualties, differentiates between categories of heat stress, and requires data be submitted on each victim of heat casualty treated. Victims of heat stress are categorized for severity, provided supportive care, and returned to duty when possible.

4. Policy. As directed in reference (b), this Command will be responsible for collecting heat stress data and reporting the data to the Operating and Training Directorate or Command Duty Officer, Marine Corps Air Ground Combat Center, Twentynine Palms, California during the period 1 May through 30 September or when the temperature exceeds 85 degrees Fahrenheit.

5. Action

a. Head, Operating Management Department shall:

(1) Ensure that the Wet Bulb Globe Temperature (WBGT) Index is collected and computed hourly.

(2) Ensure all data collected is recorded in a WBGT Index Log, beginning at 0800 until one hour after sunset during the time period stated above.

(3) Notify the Combat Center Operations and Training Directorate when the index indicates Heat Condition II or higher.

b. Officer of the Day shall assume the duties required of the Head, Operating Management Department after normal working hours, on weekends and holidays.

c. Head, Emergency Medicine Department and Head, Military Sickcall shall:

(1) In compliance with reference (c), ensure a Report of Heat Casualty (NAVMED 6500/1) is completed in every case of heat cramps, heat exhaustion, or heat stroke seen by an authorized provider. The staff Emergency Department Physician shall assume this responsibility after normal working hours.

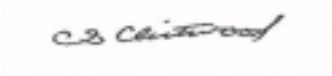
(2) Submit completed Report of Heat Casualty (NAVMED 6500/1) to Head, Patient Administration Department on the next normal work day with a copy to Head, Preventive Medicine Department.

d. Head, Patient Administration Department shall ensure the original Report of Heat Casualty (NAVMED 6500/1) is forwarded to Chief, Bureau of Medicine and Surgery (MED-23) and maintain a file copy.

e. Head, Military Sickcall shall provide personnel to give classes in heat injury prevention and treatment for Headquarters Battalion and Marine Corps Communication and Electronics School.

f. All personnel shall be familiar with the requirements and information provided in enclosure (1).

6. Forms. NAVMED 6500/1, Report of Heat Casualty is available through Central Files.



C. S. CHITWOOD

Distribution:
List A

GUIDELINES ON THE PREVENTION OF HEAT CASUALTIES

1. Body Heat and Environment

a. Body heat is regulated by complex interaction of physical and environmental factors, including temperature, humidity, air movement, radiant heat, and physiologic or behavioral responses.

b. Changes in body temperature result from combined rate of heat production and heat loss. Muscular activity greatly increases heat production.

c. Environmental sources such as radiation, convection, conduction, and evaporation between body and environment can effect body heat.

d. The degree and reversibility of a heat injury is based on duration and severity of disturbances to the body's heat regulating mechanisms.

e. Careful assessment must be made of physical demands on personnel, clothing required in the performance of duties, status of acclimatization and conditioning, level of hydration and electrolyte balances, and environmental factors in order to prevent heat casualties.

2. Nature of Heat Injury

a. Heat disorders may occur in cool climates if metabolic heat production exceeds an individual's ability to adapt. In severe cases, changes in body electrolytes and fluids may occur with heat disorders.

b. Acute overheating may lead to numerous heat-related illnesses. Heat illnesses, excluding heat injury due to burns, are considered in four basic categories:

(1) Heat Rash (miliaria rubra) is typical among military populations living in hot climates or working in hot spaces ashore or aboard ships. Heat rash can interfere with sleep, resulting in decreased physiologic efficiency and increases cumulative fatigue, which predisposes the individual to more serious heat disorders. Heat rash impairs sweating and decreases evaporative cooling of the skin, and promotes the onset of heat stroke.

(2) Heat Cramps may occur as an isolated syndrome with normal body temperature or with heat exhaustion. Heat cramps may be localized or generalized with involvement of recently stressed muscles, particularly those of the extremities and abdomen. Muscular soreness, normally felt after heat cramps, must be Differentiated from those occurring in association with rhabdomyolysis. In contrast with heat cramps, rhabdomyolysis is characterized by delayed onset (1-2 days), dark amber urine 24-48 hours after muscle injury, persistent tenderness localized over a muscle group whether the muscle is used or at rest, and severe muscle soreness. There is death of muscle tissue in the cases of rhabdomyolysis.

(3) Heat Exhaustion is characterized by an inability to dissipate sufficient heat due to overloaded but functioning body control (thermoregulatory) mechanisms. When prompt first aid is administered, the mortality rate from heat exhaustion is extremely low. A medical evaluation and follow-up is highly recommended in all cases.

(4) Heat stroke constitutes the most serious of all heat disorders and requires immediate initiation of corrective measures at an early and reversible stage. All INCIDENTS OF HEAT STROKE MUST BE CONSIDERED AS A MEDICAL EMERGENCY. Heat stroke results when the thermoregulatory mechanisms are not functioning, and the main avenue of heat loss, evaporation of sweat, is blocked. There is a high mortality rate associated with heat stroke.

3. Susceptibility of Personnel

a. Personnel who are not accustomed to strenuous physical activity in cool environments, less strenuous physical activity under conditions of high temperatures, or above normal work rates in the presence of high humidity, are particularly susceptible to heat injuries. Excess body weight contributes to this susceptibility. A period of two weeks (or more) of gradually progressive physical exertion or training is necessary for adequate conditioning and acclimatization under most field situations.

b. Conditions that alter the body’s fluid and electrolyte balances increase susceptibility to heat illness.

c. Impermeable clothing acts as a barrier that prevents evaporative cooling and greatly increases susceptibility to heat exhaustion or heat stroke. Many synthetic fabrics reduce the absorption and distribution of sweat needed to achieve optimum heat loss evaporation.

d. Febrile illnesses increase the chance of rapid heat build-up within the body. The presence of fever prior to heat stress exposure reduces the allowable exposure times.

e. Cumulative fatigue may develop slowly and must be recognized as being a significant factor increasing one's susceptibility to heat illnesses of greater severity with each incidence.

f. Prior heat illnesses increase susceptibility to subsequent heat illnesses of greater severity with each incidence.

4. Preventive Measures. The following measures are helpful in preventing systemic heat injuries, and the use of any or all of them may be necessary, dependent upon the overall situation during period of heat stress:

a. Meals. The heavy meal of the day should be served in the evening rather that at noon, followed by a rest period or light duty. One hour of rest or light duty following all meals is beneficial in reducing symptoms of heat disorders.

b. Clothing

(1) Clothing and equipment should be worn in a manner which permits free circulation of air between the uniform and the body surface. Wearing shirt collars, shirt cuffs, and trouser bottoms open will aid in ventilation. This practice may not be allowed in areas where loose fitting or open style clothing would present a safety hazard, such as around machinery with moving parts and industrial areas.

(2) In the presence of full sunlight or a high radiant heat source in machinery spaces, keeping the body covered with permeable clothing reduces the radiant heat load upon the body. When heat exposures do not include much radiant heat, removal of outer clothing reduces body temperature.

(3) Impermeable clothing must be avoided unless required for protection from toxic agents. If impermeable clothing is needed, precautions must be taken to avoid the rapid build-up of body heat. Heat illnesses may develop in minutes if impermeable clothing is worn.

c. Water is required to prevent dehydration. Individuals cannot be trained or conditioned for a decreased water intake. When profuse sweating is evident, each person will require one pint (0.5 liters) or more of water intake per hour. The water should be taken in small quantities at frequent intervals, such as every 20 or 30 minutes. The optimum temperature for drinking water is 50 " 70 degrees F (10.0 " 21.1 degrees C).

d. Salt

(1) Great caution must be taken not to exceed two grams (roughly equivalent to three salt tablets) of supplemental salt per day unless under careful supervision. In fact, salt tablets should be avoided.

(2) Supplemental salt is not required for personnel consuming field rations. Since older individuals tend to retain and may be contraindicated. The average diet provides from 15-20 grams of salt daily. Therefore, supplementary salt may be needed only in situations when individuals are exercising in hot-humid climates in the early phase of heat acclimatization, such as the first four days of exercise in the heat.

e. Rest Periods. When environments conditions are severe or physical activity is increased, particularly when individuals are not fully conditioned, the practice of short periods of work alternated with short rest periods is to be followed except in emergency situations. Rest periods should increase with a corresponding reduction of work periods as the heat stress or cumulative fatigue.

f. Sleep. If at all possible, personnel should sleep in a cooler environment than the working conditions. Recovery from cumulative fatigue is a chief consideration if there are to be several consecutive days of exposure to heat.

g. Predisposition. There is evidence that a second bout of heat illness may occur following an attack of heat stroke or severe heat exhaustion. Subsequent episodes are usually more severe than the initial incident. Individuals with a history of previous heat stroke or severe heat exhaustion should be observed carefully and handled with extreme caution if being re-exposed to similar precipitating conditions. Affected persons should be removed from the environment as soon as there are any signs of adverse changes in physical or behavioral responses.

h. Training Schedules may need to be modified to have the most strenuous activities during the cooler part of the day or substituting activities during the cooler part of the day or periods of higher heat stress. A slowdown in specific training programs in hot, humid weather may be needed. These modifications should not deprive personnel of normal amounts of sleep. Individuals with poor physical fitness require a slower conditioning program than the average person.

i. General Health. Maintaining good physical conditioning and avoidance of undue fatigue are important. Mild illnesses such as respiratory infections, diarrhea, or reactions to immunizations which do not ordinarily interfere with duty may increase susceptibility to heat illnesses. Poor physical condition, lack of muscular tone, obesity, alcoholic indulgence, lack of sleep, hypertension, or relatively poor cardiovascular responses to exertion increases susceptibility to heat illnesses. Special attention should be given to personnel with any of these pre-disposing factors. A reduced training program and limited heat stress exposures until their overall physical fitness level has improved is recommended. Individuals who exhibit poor improvement of overall physical fitness may need to eliminate heat stress exposures.

5. First Aid

a. All personnel must be familiar with the symptoms of heat illnesses and instructed to observe others when operating under conditions of heat stress. Flushing of the skin is often the first sign noted. While flushing may not itself signify that heat illness is imminent, personnel presenting this appearance should be evaluated for additional symptoms of heat disorder.

b. If dizziness, headache, stumbling or other signs of weakness, undue fatigue, stomach upset, or change of sweating from further exposure and promptly given rest and first aid. Mild cases will become serious if activity continues in the setting where the illness occurred. First aid measures include stopping of physical activity, removal to a cool, shady location (if available), loosening of clothing, and equipment removal.

c. If the victim appears to have heat stroke they should have clothing removed and be sponged with ice, ice water, or cold water if available. Air movement should be initiated by faning the victim. Medical aid should be sought while these procedures are being carried out.

d. Fluids should not be forced until it is certain the affected person is truly dehydrated. Over hydration can do more harm to the heat stroke victim. Administration of electrolytes by either oral or intravenous methods should be withheld until laboratory analysis of blood and urine specimens clearly indicate deficiencies exist. This applies to heat exhaustion as well as heat stroke victims.

e. Individuals suffering from heat exhaustion or heat stroke should be handled as litter cases in the field.

f. First aid, followed by rapid evacuation of the patient to a location that can provide medical care is essential. Transport vehicles should be adequately ventilated or cooled to prevent further stress.